On the Organization of the Acarina of the Family Gamasidæ—*Characters which prove that they constitute a natural Transition between the Hexapod Insects and the Arachnida.* By M. Mégnin.

In our opinion the type of the family Gamasidæ is the genus *Uropoda* and not *Gamasus* *, because it is the *Uropodæ* that present the most perfect organization, most nearly approaching that of insects and even of the highest insects. This goes so far that we might perfectly well maintain that they are true Hexapoda, seeing that the feet of the first pair form an integral part of the organs of the mouth, and constitute true labial palpi by the union of the coxæ of this pair with the mentum, which forms a true labium, and by their insertion within the margins of the buccal cavity.

This organization of the *Uropodæ*, so much resembling that of certain suctorial insects, falls off gradually when we pass to the genera *Gamasus*, *Dermanyssus*, and *Pteroptus*, to acquire that which principally characterizes the Arachnida—that is to say, to become plainly octopod; thus the feet of the first pair, which still fulfil the functions of palpi, and differ from the rest in the form of the tarsus in the *Gamasi* and *Dermanyssi*, in which the coxæ are separated from the mentum, become like the rest in form and attachment in the *Pteropti*, and are then exclusively organs of progression.

It is not only by the form and functions of the first pair of feet that the Gamasidæ depart from all the other Arachnida, but also by the number and form of the parts of the rostrum, the composition of which much resembles that of the Hymenoptera. As in the latter, the maxillæ concur to form a tube sheathing the ligula; this tube is completed superiorly by an advanced *labium*, which does not exist in the Arachnida; and the complete tube, with the organs it contains, forms a true trunk, shorter than in the Hymenoptera, but movable as in those insects, and containing nearly the same elements. The principal difference consists in the position and form of the mandibles, which, instead of being short, robust, and attached in front of the trunk as in the Hymenoptera, are in the form of rods terminated by a chela, or of styles sliding in the interior of the rostral tube and moving independently of each other; they thus remind us in form of the mandibles in the Hemiptera, in some Diptera, and especially in the fleas. It may be added that we find as accessory parts of the rostrum, besides the large pair of maxillary palpi common to all insects and all Arachnida, a second pair of small cultriform maxillary palpi, of two joints, of which only the terminal one is free and movable, resembling those of the Cicindelidæ and Carabidæ, or, better still, the *galea* of the Orthoptera—secondary palpi which are not met with in any arachnid of other families.

The Gamasidæ also possess an independent, movable and setiferous mentum, such as is not presented by any other Acarian family,

* See a previous note on this subject, Comptes Rendus, May 31, 1875.

and which has no resemblance to the sternal lip of the larger Arachnida.

These generalities upon the anatomy of the Gamasidæ show how much justification we had to regard this family as the first in the order Acarina, and as establishing the transition between the class Arachnida and that of insects.—*Comptes Rendus*, December 6, 1875, p. 1135.

On the Presence in existing Seas of a Type of Sarcodaria of the Secondary Formations. By M. P. Fischer.

Thirty years ago Quenstedt noticed *, under the name of *Dendrina*, some excavations of unknown origin observed by him in the most superficial layers of the *Belemnitellæ* of the Chalk. These were so imperfectly defined that the German author questioned whether they were not due to a morbid alteration of the test of the *Belemnitellæ*.

The *Dendrinæ* of Quenstedt remained long comparatively unknown. Morris approximated them to the *Talpinæ*, which I regard provisionally as perforations of fossil Bryozoa or Hydrozoa; Pictet and other palæontologists attributed them (I do not know why) to Annelids; Etallon established a distinct order for these excavations, and thought he could describe several species of *Dendrina* from the Jurassic formations, species characterized solely by the general form of the perforations.

By examining the *Dendrinæ* of the test of *Belemnitella*, I ascertained, by means of solution of carmine, that there existed a manifest osculum at which each *Dendrina* opened, and that these oscula were not without resemblance to the efferent orifices or proctides of the sponges of the genus *Cliona*. It was therefore probable that the *Dendrinæ* were related to the sponges.

An unexpected discovery has just furnished fresh materials for the elucidation of this question. Shells dredged at a depth of 25–90 fathoms in the Bay of Biscay showed perforations of existing animals which I could not but regard as allied to those described in the fossil state by Quenstedt. Soon afterwards the same fact recurred in shells from the Mediterranean and the Indian Seas, and I acquired the certainty that the *Dendrinæ* still exist in nearly all the seas of the globe, and that they present the same characters and have the same perforating habits as those which riddled the fossil shells of the Secondary formations with their perforations.

If we examine with a lens the outer surface of some coloured shells (*Pecten*, for example), small, opaque, irregular, lobulated whitish spots may be observed; these are *Dendrinæ*. A rounded orifice terminates a tolerably wide oblique canal, and forms a communication between the exterior and the cavity of the perforating animal. The orifice is single, and resembles the large oscula or efferent apertures of the *Clionæ*; the lobules also are probably in

* Petrefactenkunde Deutschl. Cephal. Taf. xxx. fig. 36.